My Year in Afr

A 25-country journey yields hundreds of ideas for ending hunger and poverty

BY DANIELLE NIERENBERG, N01 PHOTOGRAPHS BY BERNARD POLLACK

ALONG THE SHORELINE OF THE GAMBIA River, a group of women have reduced hunger for their families with the help of a certain briny mollusk. To do this, the 15 communities in the Women's Oyster Harvesting Association—a total of nearly 6,000 people—had to agree to close one tributary in their oyster territories for an entire year and to lengthen the "closed" season in other areas.

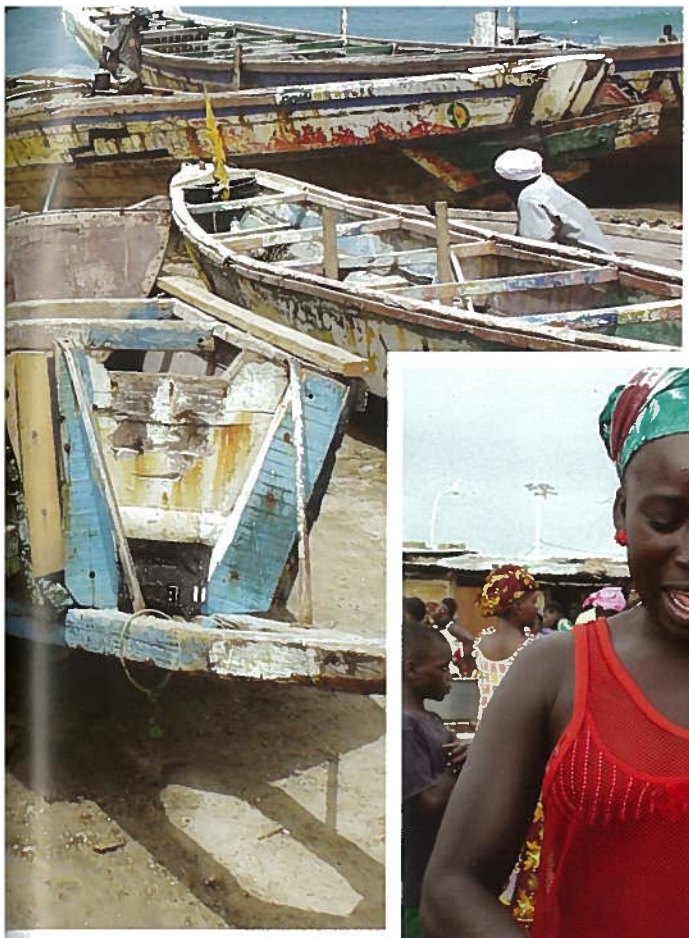
These steps were difficult in the short term. But by the following season, the oysters were larger, and so was the price they commanded. So far, customers have been willing to pay a little bit more. Meanwhile, the harvesters—many of them immigrants from surrounding nations and the poorest of the poor in Gambia—are building hatcheries to further boost the wild stocks, eyeing upscale markets such as hotels and restaurants that cater to tourists and putting on educational plays about preserving the mangrove trees that serve as shellfish habitats.

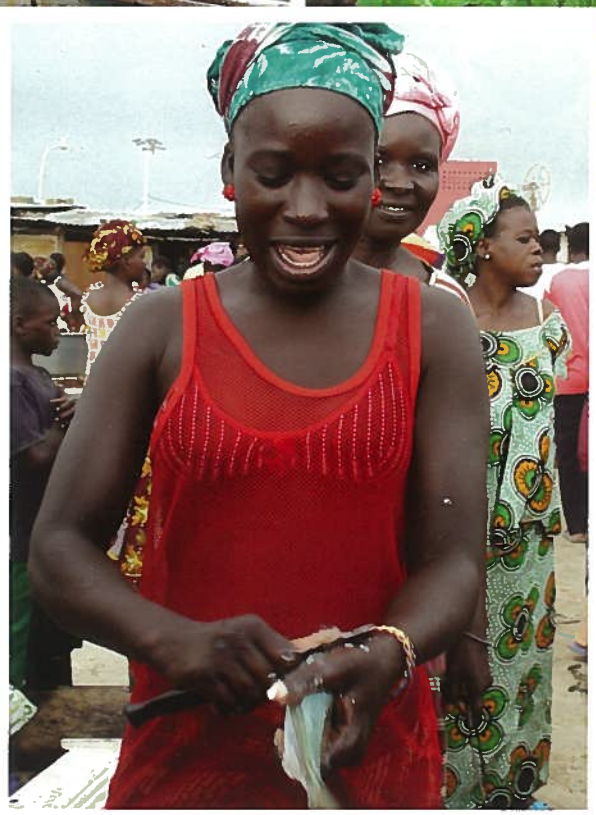
Oysters may not come to mind when you think about eliminating hunger and poverty. And it's true that oysters alone cannot address the tragedy of an estimated 925 million people worldwide who are undernourished.

What can? Typically experts cite higher-yielding seed varieties, dams to irrigate vast tracts of land and mountains of fertilizer to rejuvenate depleted soil. Yet seafood provides about 15 percent of the calories and a third of the protein that people consume—and more than that in poorer nations, including much of West Africa. So fisheries will, in many regions, be lasting sources of food and income for poor communities.

It was on a journey to find such overlooked solutions to hunger that we came upon this group of oyster harvesters. In 2009 and 2010, as part of a Worldwatch Institute project called Nourishing the Planet, photographer Bernard Pollack and I traveled to 25 sub-Saharan African nations to hear people's stories of hope and success in agriculture.

This journey has paid off in a trove of innovation. On dozens of farms in Malawi we saw yield-boosting techniques used by more than 120,000 farmers, such as planting nitrogen-fixing trees that enrich the soil for corn crops and that increase harvests fourfold, with





Danielle Nierenberg visits with Rwandan farmers who use the methane from decomposing cow manure to cook for their families; fishing boats in Nouakchott, Mauritania; cleaning the day's catch in a market outside Banjul, Gambia; spinach and kale grow in dirt-filled sacks in Kibera, a slum of Nairobi, Kenya.

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no added fertilizer. Across West Africa, we met farmers and shopkeepers who are using simple storage systems to prevent cowpeas, a major crop in the region, from rotting. If half of the area's cowpea harvest were stored this way, it would be worth $255 million annually to some of the poorest people in the world.

We were also interested in models that have applications outside of Africa. A rooftop gardening cooperative that is feeding people in Dakar, Senegal, offers guidance for neighborhoods struggling with food shortages in inner-city New York. Individually, the hundreds of millions of small-scale farmers and their families who are the majority of the world's poor would appear to possess little power in the face of global issues like hunger, climate change and the availability of water. But if each of their innovations were scaled up to bring food to the tables of not one farmer but 100 million or more, as well as to the consumers who depend on them, it could change the entire global food system.

Here are just a handful of the hundreds of stories we heard:

SACKS OF HOPE

It's nearly impossible to describe how many people live in the crowded streets of Kibera, a neighborhood in Nairobi, Kenya. Everywhere you look there are people walking, working, selling food or tennis shoes, sorting trash, herding goats. Anywhere from 700,000 to a million people live mostly in wooden shacks with tin roofs in an area just over half the size of Central Park in Manhattan.

Kibera looks and smells like the most hopeless place on the planet. But the women farmers I met there are actually thriving by raising vegetables on what they call "vertical farms." Using tall sacks or old cement bags filled with dirt, the women grow crops in the sacks by poking holes at different levels and planting seeds. They're not only growing food to eat and to sell, they're helping dispel the myth that urban agriculture only feeds the poor and hungry in cities. By growing organic seeds of traditional African vegetables, like spider plant and African eggplant, the Kibera farmers are becoming a source of seed for rural farmers. There aren't many local seed companies in eastern Africa, so the Kibera farmers are providing a much-needed resource.

The women told us that more than 1,000 of their neighbors are growing food in a similar way—something that Red Cross International recognized during 2007 and 2008, when there was conflict in the slums of Nairobi. No food could come into these areas, but most residents didn't go hungry because so many of them were growing crops—in sacks, on vacant land or elsewhere.

All the women told us that they saved money because they no longer had to buy vegetables at the store. They claimed the food

Nierenberg tours the urban farms in Kibera; briquettes for cooking made by a farmer in Nairobi; eggplant harvested by the Bakau Women's Garden Project in Banjul, Gambia; an Ethiopian farmer who created his own water pumping system.

tastes better because it was grown organically—but it also might result from the pride of growing something themselves.

WATER HARVEST

We met Kes Malede Abreha on his farm near Aksum, Ethiopia. Roughly eight years ago, this small, wiry, soft-spoken man with a neatly trimmed beard started digging for water on his very dry land. His neighbors thought he was crazy, telling him he would never find water. His wife left him, moving their children into town.

But about 16 meters down, Kes Malede hit water. After his wife returned, he began sketching ways that would make it easier to "push" that water to the surface. He developed a series of pumps. The one he's using now is built from inexpensive wood, iron and metal piping, all available locally. Not only does this simple pump push or lift water to the surface, it irrigates his fruit trees and crops, including teff, sorghum, tomatoes and other vegetables, through a system of hoses.

Before he developed his water-management system, Kes Malede and his family lived in a one-room house and could grow only enough staples to feed the household. Today, the family lives in a bigger house, grows a diversity of crops and raises chickens, cattle, goats and bees. Kes Malede's investment in more beehives has not only provided income from honey production, but helps pollinate his fruit and vegetable crops. He's now helping other farmers—the same ones who thought he was crazy—by teaching them about his water-lifting system and by selling modern, box-style beehives that allow farmers to manage the bees better and harvest more honey.

BRIQUETTE BY BRIQUETTE

Charles Onyoni Onyando picked up several briquettes made out of paper, potato and banana peels, dry leaves and newsprint, which he made at his home in Nairobi, Kenya. "We have all these resources around us," he told us, "but no one knows how to use them."

Onyando does. He collects organic waste from his neighbors, combines it with paper, and shreds it with a crank-powered shredder to form circular briquettes that are longer lasting—and more environmentally friendly—than charcoal.

Through trial and error, Onyando learned what combination of organic waste and water made the best-burning briquette with the least smoke. Each briquette lasts from six to seven hours and produces the equivalent of seven kilowatts of electricity—enough to cook two kilograms of dried beans.

He sells his briquettes and teaches other farmers how to make them. He's been asked to hold workshops as far away as Cameroon. He sells the briquettes for roughly twice what they cost him to make.

GREEN GOLD OF GHANA

In Anamaase, Ghana, the New Frontier Farmers and Processor group is led by the village's chief, Osbararima Mana Tibi II. He said he took it upon himself to help revive farmland and improve the lives of the farmers in his village of about 5,000 people.

To help restore the soil, they've started growing nitrogen-fixing trees, including moringa, the so-called "green gold of Ghana." When processed into powder, the moringa leaves are very high in protein and can be manufactured into formula to feed malnourished children. Because the moringa processing "generates a lot of trash," says Chief Tibi, the stalks and other leftover parts of the plant can be used as animal fodder. New Frontier is also providing moringa seedlings to a group of 40 people living with HIV/AIDS, who use moringa as a nutritional supplement and grow it to earn income.

The group is doing some of its own community-based research by testing the effect moringa has on livestock. According to their studies, feeding sheep moringa leaves has reduced fat in the meat dramatically, "making it taste more like bush meat," Tibi said.

It lasts longer than regular mutton when it is preserved. They've also found that goats that eat moringa are healthier.

FUEL FROM COWS

Helen Bahikwe, a farmer in the Gicumbi District of Rwanda, began working with Heifer International in 2002. She now has five cows—and an excess of manure. With a subsidy from the government as part of the National Biogas Program, Helen built a biogas collection tank, which allows her to use the methane from decomposing manure to cook for the 10 members of her family. She no longer has to collect or buy firewood, which saves time and money and protects the environment. The fuel also burns cleaner.

And, according to Mukerema Donatilla, another farmer we met, biogas "helps with hygiene" on the farm because they can use hot water to clean cow udders before milking as well as the milk containers.

A NEW MIRACLE FOR MALAWI

Most Malawians think of traditional foods, such as amaranth and African eggplant, as poor-people foods grown by "bad" farmers. But these crops might hold the key to solving hunger, malnutrition and poverty in Malawi—and in other African countries.

Those are just two of the crops that Stacia and Kristof Nordin grow on their small plot of land. They came to Malawi in 1997 as Peace Corps volunteers. They now call the country home, and use their garden as a demonstration plot for composting, water harvesting, intercropping and other methods that help build organic matter in soils, conserve water and ensure agricultural diversity.

Nowhere is this kind of help needed more than in Malawi, a nation of 14 million in southeast Africa that is among the least developed and most densely populated on earth. The country might be best known for the so-called "Malawi Miracle." Five years ago, the government decided to provide fertilizer subsidies to farmers to grow maize. Since then, maize production has tripled, and Malawi has been touted as an agricultural success story.

But the way the corn is refined, says Kristof, makes it "kind of like Wonder Bread," leaving it with just two or three nutrients.

"Forty-eight percent of the country's children are still nutritionally stunted, even with the so-called miracle," Kristof says. Rather than focusing on maize, a crop that is not native to Africa, the Nordins advise farmers that there is "no miracle plant—just plant them all." Malawi has more than 600 indigenous and naturalized food plants to choose from. Maize, ironically, is one of the least-suited to this region because it's highly susceptible to pests, disease and erratic rainfall.

Unfortunately, the "fixation on just one crop," says Kristof, means that traditional varieties of foods are going extinct—crops that already are adapted to drought and heat, traits that become especially important as agriculture copes with climate change.

Everything from garden beds to the edible fish in the pond to the composting toilet has an important role on the Nordins' property. And although the neighbors have been skeptical, they're impressed by the more than 200 fruits and vegetables grown on this small plot, providing a year-round supply of food for the Nordins and their neighbors.

CHANGES FOR THE MAASAI

We met with the group of Maasai pastoralists in the community primary school. It was humbling to see so many people—many wearing the traditional brightly woven clothes, beads and elaborate earrings—come through the door to greet us.

Over the years, livestock keepers like the Maasai in Kenya have been pushed out of their traditional grazing lands to more arid regions. Governments are increasingly promoting cross-breeding of native breeds with exotic breeds—breeds that were designed to gain more weight and produce more milk. The problem is that these breeds have a hard time adapting to sub-Saharan Africa's dry conditions, as well its pests and diseases. As a result, pastoralists who adopt these breeds have to spend more on pesticides and antibiotics to keep cattle healthy. According to one of the community elders, the "old breeds could go 40 kilometers (for food and water) and come back," but the new breeds can't tolerate the distance or the heat.

That's one reason why different pastoralist communities sometimes clash: When cattle can't travel far for water, livestock keepers have to find it elsewhere, often at sites that are traditionally used by other communities. A man wearing a Harley-Davidson hat along with his Maasai shawl acknowledged that although they fight with other communities over resources, "they're just like us," trying to survive with very little support from the government or NGOs.

What surprised me most about these livestock keepers is their understanding that the world is changing. Although most of these people don't have access to cable TV or even radios, they are aware that climate change is likely responsible for the drought plaguing much of East Africa, killing thousands of livestock over the last few months.

They know that many of their children won't have the same lives that their ancestors have had for centuries. Many will choose to go to the cities, but they said if their children become "landed," they want them to maintain links to the pastoralist way of life. And they said that for some of them, livestock is what they do best and what they have a passion for—and that they should be allowed to continue doing it. TN

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